WHAT IS CLAIMED IS:

1. A light-emitting device using gallium nitride compound semiconductor comprising:

an emission layer with a multi quantum-well (MQW) structure, in which a barrier layer and a well layer are formed alternately; wherein said barrier layer is made of $Al_xGa_{1-x}N$ ($0<x\leqq 0.18$).

2. A light-emitting device using gallium nitride compound semiconductor according to claim 1, wherein said well layer is made of $In_yGa_{1-y}N$ ($0<y\leqq 0.1$).

3. A light-emitting device using gallium nitride compound semiconductor according to claim 1, wherein said barrier layer has a thickness from 2 nm to 10 nm.

4. A light-emitting device using gallium nitride compound semiconductor according to claim 1, wherein said barrier layer has a thickness from 3 nm to 8 nm.

5. A light-emitting device using gallium nitride compound semiconductor according to claim 1, wherein a luminous wavelength is in the ultraviolet rays region.

6. A light-emitting device using gallium nitride compound semiconductor comprising:

an emission layer with a multi quantum-well (MQW)

structure, in which a barrier layer and a well layer are formed alternately; and

an n-layer made of an impurity-doped $Al_xGa_{1-x}N$ ($0<x\leqq 0.06$).

7. A light-emitting device using gallium nitride compound semiconductor according to claim 6, wherein a strain relaxation layer made of $In_yGa_{1-y}N$ ($0.02\leqq y\leqq 0.04$)is formed between said n-layer and said emission layer.

8. A light-emitting device using gallium nitride compound semiconductor according to claim 6, wherein said n-layer has a thickness from 50 nm to 300 nm.

9. A light-emitting device using gallium nitride compound semiconductor according to claim 6, wherein said n-layer has a thickness from 150 nm to 250 nm.

10. A light-emitting device using gallium nitride compound semiconductor according to claim 6, wherein a luminous wavelength is in the ultraviolet rays range.

11. A light-emitting device using gallium nitride compound semiconductor comprising:

an emission layer with a multi quantum-well (MQW) structure, in which a barrier layer and a well layer are formed alternately;

a p-layer; and

an n-layer;

wherein said emission layer is sandwiched by said p-layer and said n-layer, and wherein a ratio of an electron concentration of said n-layer to a hole concentration of said p-layer (electron/hole) is from 0.5 to 2.0.

12. A light-emitting device using gallium nitride compound semiconductor comprising:

an emission layer with a multi quantum-well (MQW) structure, in which a barrier layer and a well layer are formed alternately;

a p-layer; and

an n-layer;

wherein said emission layer is sandwiched by said p-layer and said n-layer, and wherein a ratio of an electron concentration of said n-layer to a hole concentration of said n-layer (electron/hole) is from 0.7 to 1.43.

13. A light-emitting device using gallium nitride compound semiconductor comprising:

an emission layer with a multi quantum-well (MQW) structure, in which a barrier layer and a well layer are formed alternately;

a p-layer; and

an n-layer;

wherein said emission layer is sandwiched by said p-

layer and said n-layer, and wherein a ratio of an electron concentration of said n-layer to a hole concentration of said n-layer (electron/hole) is from 0.8 to 1.25.

14. A light-emitting device using gallium nitride compound semiconductor according to claim 11, wherein a luminous wavelength is in the ultraviolet rays range.

15. A light-emitting device using gallium nitride compound semiconductor according to claim 1, further comprising:

a substrate; and

a buffer layer formed on said substrate.

16. A light-emitting device using gallium nitride compound semiconductor according to claim 15, wherein said buffer layer is formed at a temperature of 1000 ℃ to 1180 ℃.

17. A light-emitting device using gallium nitride compound semiconductor according to claim 15, wherein said buffer layer has a thickness of 0.01 μm to 3.2 μm.

18. A light-emitting device using gallium nitride compound semiconductor according to claim 15, wherein said buffer layer is formed by a physical vapor deposit such as sputtering, ion plating, laser abration, ECR, etc.

19. A light-emitting device using gallium nitride compound semiconductor according to claim 18, wherein said buffer layer has a thickness of 100 Å to 3000 Å.

20. A light-emitting device using gallium nitride compound semiconductor according to claim 18, wherein said buffer layer is formed at a temperature of 200 ℃ to 600 ℃.

21. A light-emitting device using gallium nitride compound semiconductor according to claim 18, wherein said buffer layer is treated by heat treatment at a temperature 1000 ℃ to 1250 ℃.

22. A light-emitting device using gallium nitride compound semiconductor according to claim 21, wherein said heat treatment is carried out in an atmosphere of H_2 and NH_3 gases.